UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,755	03/08/2004	Raja Neogi	42P18504	4367

59796 7590 06/26/2007	EXAMINER
INTEL CORPORATION c/o INTELLEVATE, LLC P.O. BOX 52050 MINNEAPOLIS, MN 55402	SAUNDERS JR, JOSEPH

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

		Application No.	Applicant(s)
Office Action Summary		10/796,755	NEOGI, RAJA
		Examiner	Art Unit	
		Joseph Saunders	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
 Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 March 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-33</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-33</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>08 March 2004</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This is the initial office action based on the application filed March 8, 2004.

Claims 1 – 33 are currently pending and considered below.

Drawings

2.   The drawings are objected to because Figure 4 contains formulas with improper

notation. In particular the formula of block 406 should have a "pi" symbol not a "product"

symbol and should also include a set of parenthesis e.g., (pi/64). The formula of block

410 contains the line "V(n,i+1), V(n-1,i), V(n-1,i+1)" separated by comas therefore

rendering it is unclear as to what V(n,i) is supposed to be less than. Corrected drawing

sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to

avoid abandonment of the application. Any amended replacement drawing sheet should

include all of the figures appearing on the immediate prior version of the sheet, even if

only one figure is being amended. The figure or figure number of an amended drawing

should not be labeled as "amended." If a drawing figure is to be canceled, the

appropriate figure must be removed from the replacement sheet, and where necessary,

the remaining figures must be renumbered and appropriate changes made to the brief

description of the several views of the drawings for consistency. Additional replacement

sheets may be necessary to show the renumbering of the remaining figures. Each

drawing sheet submitted after the filing date of an application must be labeled in the top

margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If

the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the

drawings will not be held in abeyance.

Specification

3.   The disclosure is objected to because of the following informalities: In paragraph

30 "five samples" should be corrected to "five thousand samples". The specification

also contains the formulas objected to in the Drawings section above and should also

be clarified.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

5.   Claims 4 – 11, 15 – 22, and 26 – 33 are rejected under 35 U.S.C. 112, first

paragraph, as failing to comply with the enablement requirement. The claim(s) contains

subject matter which was not described in the specification in such a way as to enable

one skilled in the art to which it pertains, or with which it is most nearly connected, to

make and/or use the invention. Claims 4, 15, and 26 from which claims 5 – 11, 16 – 22,

and 27 – 33 depend recite the limitation "performing feature extraction", however when

referring to the specification and the drawings to see what is meant by "feature

extraction" the specifics regarding the formula used are unclear. The formula states that

the value of "1" is assigned to F(n,i) if V(n,i) is less than "V(n,i+1), V(n-1,i), V(n-1,i+1)"

otherwise a value of "0" is assigned. The formula is unclear because one of ordinary

skill in the art would not understand if the value of "1" should be assigned to F(n,i) if

V(n,i) is less than all three values e.g., V(n,i+1), V(n-1,i), and V(n-1,i+1), or less than

any one of the three values e.g., V(n,i+1), V(n-1,i), or V(n-1,i+1), or less than some

combination of the three values.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 23 – 33 are rejected under 35 U.S.C. 101 because the claimed invention

is directed to non-statutory subject matter. Claim 23 is directed toward a machine-

readable medium containing instructions which, when executed by a processing

system, cause the processing system to perform a method. However when referring to

the specification to see what support is given to the "medium", it becomes clear that the

applicant is trying to incorporate non-statutory subject matter i.e., "transmission over the

Internet, electrical, optical, acoustical or other forms of propagated signals (e.g., carrier

waves, infrared signals, digital signals, etc.) or the like," Paragraph 14.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8.   Claims 1 – 4, 7, 8, 11 – 15, 18, 19, 22 – 26, 29, 30, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Haitsma et al. (A Highly Robust Audio Fingerprinting System), hereinafter Haitsma.

Claim 1: Haitsma discloses a method, comprising: receiving an unlabeled audio clip; processing the unlabeled audio clip to extract an audio fingerprint; determining a stored audio fingerprint that matches the extracted audio fingerprint; and determining a labeled audio clip based on the stored audio fingerprint (Abstract and Introduction: Paragraph 3).

Claim 12: Haitsma discloses a system (A Highly Robust Audio Fingerprinting System), comprising: an audio fingerprint generator (Extraction Algorithm); and a database (fingerprint database), wherein the audio fingerprint generator receives an unlabeled audio clip and wherein the audio fingerprint generator processes the unlabeled audio clip to extract an audio fingerprint, wherein the database determines a stored audio fingerprint that matches the extracted audio fingerprint and wherein the database determines a labeled audio clip based on the stored audio fingerprint (Abstract and Introduction: Paragraph 3).

Claim 23: Haitsma discloses a machine-readable medium containing instructions

("fingerprinting algorithm has been shown to run efficiently on portable devices such as

a PDA or mobile phone," Extraction Algorithm: Paragraph 6. Therefore, since the

algorithm runs on an electronic device the machine-readable medium is inherent.)

which, when executed by a processing system, cause the processing system to perform

a method, the method comprising: receiving an unlabeled audio clip; processing the

unlabeled audio clip to extract an audio fingerprint; determining a stored audio

fingerprint that matches the extracted audio fingerprint; and determining a labeled audio

clip based on the stored audio fingerprint (Abstract and Introduction: Paragraph 3).

Claim 2: Haitsma discloses the method of claim 1, further comprising: determining

information about the labeled audio clip; and providing the information to a user

(Introduction: Paragraph 3).

Claim 3: Haitsma discloses the method of claim 2, wherein the unlabeled audio clip is a

song (Abstract).

Claim 4: Haitsma discloses the method of claim 1, wherein processing the unlabeled

audio clip to extract an audio fingerprint comprises: receiving an audio signal

representing the unlabeled audio clip (Abstract); down-sampling the received audio

signal into a mono audio stream ("Since the algorithm only takes into account

frequencies below 2kHz the received audio is first down sampled to a mono audio

stream with a sampling rate of 5kHz," Extraction Algorithm: Paragraph 6); processing

the down-sampled audio signal by generating frequency domain coefficients to produce

one or more audio samples ("Fourier coefficients," Extraction Algorithm: Paragraphs 1

and 3); performing feature extraction of the one or more audio samples to produce a

compact data representation (Extraction Algorithm: Paragraph 4 see Equation 1); and

packing the compact data representation into one or more sub-fingerprints (Extraction

Algorithm: Paragraph 5).

Claim 7: Haitsma discloses the method of claim 4, wherein the received audio signal is

uncompressed ("Figure 2a and Figure 2b show a fingerprint block from an original CD

and the MP3 compressed (32Kbps) version of the same excerpt, respectively,"

Extraction Algorithm: Paragraph 5. Therefore, the algorithm is applicable to compressed

and uncompressed received audio signals).

Claim 8: Haitsma discloses the method of claim 4, further comprising combining the

one or more sub-fingerprints to create a fingerprint block ("Figure 2 shows an example

of 256 subsequent 32-bit sub-fingerprints (i.e. a fingerprint block)," Extraction Algorithm:

Paragraph 5).

Claim 11: Haitsma discloses the method of claim 4, wherein the sub-fingerprint is 32

bits ("Figure 2 shows an example of 256 subsequent 32-bit sub-fingerprints (i.e. a

fingerprint block)," Extraction Algorithm: Paragraph 5).

Claims 13 – 15, 18, 19, 22, 24 – 26, 29, 30, and 33: Claims 13 – 15, 18, 19, and 22

directed to a system and 24 – 26, 29, 30, and 33 directed to a machine-readable

medium are substantially similar in scope to claims 2 – 4, 7, 8, and 11 and therefore are

rejected for the same reasons above.

9.   Claims 9, 20, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by

Haitsma and Pohlmann (Principles of Digital Audio Fourth Edition), hereinafter

Pohlmann (See MPEP 2131.01, Multiple Reference 35 U.S.C. 102 Rejections).

Claim 9: Haitsma discloses the method of claim 4, wherein the received audio signal

has a sample rate of 44.1 kHz (Haitsma discloses "CD", Extraction Algorithm:

Paragraph 5 and Pohlmann discloses the sampling rate of a CD is 44.1 kHz, Page 245.

Haitsma also discloses starting with a signal with a 44.1 kHz sampling rate in an

example situation of signal degradation, see Resampling under Experimental

Robustness Results) and wherein down-sampling the received audio signal into a mono

audio stream comprises down-sampling the received audio signal into a mono audio

stream with a sampling rate of 5 kHz ("Since the algorithm only takes into account

frequencies below 2kHz the received audio is first down sampled to a mono audio

stream with a sampling rate of 5kHz," Extraction Algorithm: Paragraph 6).

Claims 20 and 31: Claim 20 directed to a system and claim 31 directed to a machine-

readable medium are substantially similar in scope to claim 9 and therefore are rejected

for the same reasons above.

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

11.   Claims 10, 21, and 32 are rejected under 35 U.S.C. 103(a) as being

unpatentable over <u>Haitsma</u> in view of <u>Pohlmann</u>.

Claim 10: <u>Haitsma</u> discloses the method of claim 4, where down-sampling the received

audio signal into a mono audio stream comprises down-sampling the received audio

signal into a mono audio stream with a sampling rate of 5 kHz ("Since the algorithm only

takes into account frequencies below 2kHz the received audio is first down sampled to a

mono audio stream with a sampling rate of 5kHz," Extraction Algorithm: Paragraph 6).

<u>Haitsma</u> *does not disclose* wherein the received audio signal has a sample rate of 48

kHz. <u>Haitsma</u> does disclose that the source of the audio signal may come from many

sources including AM/FM radio signals, GSM cellular signals, and signals stored on CD

to name a few. Pohlmann discloses another source of digital audio, DVD-Audio,

supporting higher sampling rates of 48, 88.2, 96, 176.4, and 192 kHz therefore offering

improved sound quality over CD at 44.1 kHz, Page 390. Since the source of the audio

signal may vary and the purpose is to show a robust fingerprinting system for all types

of signals, it would have been obvious to one of ordinary skill in the art to apply the

invention of Haitsma to a DVD-Audio signal as shown by Pohlmann therefore allowing

for higher quality audio signals to also be fingerprinted for identification purposes.

Claims 21 and 32: Claim 21 directed to a system and claim 32 directed to a machine-

readable medium are substantially similar in scope to claim 10 and therefore are

rejected for the same reasons above.

12.   Claims 5, 6, 16, 17, 27, and 28 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Haitsma in view of Konstantinides (5,508,949), hereinafter

Konstantinides.

Claims 5 and 6: Haitsma discloses the method of claim 4, wherein processing the

down-sampled audio signal by generating frequency domain coefficients to produce one

or more audio samples comprises: segmenting the down-sampled audio signal into one

or more frames ("First the audio signal is segmented into frames," Extraction Algorithm:

Paragraph 1). Haitsma also discloses having the frequency spectrum of the down-

sampled audio signal divided into a number of bands so that properties of the down-

sampled audio signal can be captured (See Figure 1: Band Division Stage and Energy

Computation Stage). Haitsma does not disclose performing inverse discrete cosine

transform on the one or more frames, wherein performing inverse discrete cosine

transform on the one or more frames captures properties of the down-sampled audio

signal. Konstantinides discloses a method of fast subband filtering "including an

analysis filter in which an inverse discrete cosine transform is employed," Abstract.

Konstantinides teaches that subband filtering is compute intensive operation and the

use of the IDCT allows for a reduction in multiplication and addition operations (Column

1 Line 65 – Column 2 Line 21) and the invention "although described in connection with

the MPEG coding standard, is considered useful for other coding applications and

standards," Column 3 Lines 43 – 46. Therefore it would have been obvious to one of

ordinary skill in the art at the time of the invention to use the fast subband filtering as

disclosed by Konstantinides in the system of Haitsma thereby allowing for improved

computational speeds in the band division stage necessary for capturing energy

properties of the individual bands.

Claims 16, 17, 27, and 28: Claims 16 and 17 directed to a system and 27 and 28

directed to a machine-readable medium are substantially similar in scope to claims 5

and 6 and therefore are rejected for the same reasons above.

Conclusion

13.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Joseph Saunders whose telephone number is (571)

270-1063. The examiner can normally be reached on Monday - Thursday, 9:00 a.m. -

4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

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SINH TRAN
SUPERVISORY PATENT EXAMINER

JS
June 15, 2007